



Paraneoplastic dermatomyositis with atypical features associated with a solid pseudopapillary pancreatic neoplasm

N. A. Uribe-Ruiz^{1,6} · D. A. Domínguez-Guzmán³ · J. C. Jaramillo-Álvarez^{4,5} · A. F. Vargas-Camacho^{1,6} · C. Pineda² · M. Restrepo-Escobar^{1,6} · C. H Muñoz-Vahos^{1,2,6} · L. A González-Naranjo^{1,6} · A. L. Vanegas-García^{1,2,6}

Received: 16 December 2025 / Revised: 29 December 2025 / Accepted: 2 January 2026 / Published online: 1 February 2026
© The Author(s) 2026

Abstract

Dermatomyositis (DM) is an autoimmune inflammatory myopathy that may occur as a paraneoplastic syndrome, most commonly associated with ovarian, lung, and gastrointestinal malignancies. Solid pseudopapillary pancreatic tumor is a rare neoplasm with low malignant potential, and to our knowledge only one case has previously been reported in association with DM. We present the case of a 21-year-old woman with six months of proximal muscle weakness, dysphagia, and cutaneous lesions characteristic of DM, including a heliotrope rash, shawl sign, and V-sign. She also exhibited atypical features, such as pseudoangioedema, an ovoid palatal patch, and generalized subcutaneous edema. Laboratory studies showed elevated muscle enzyme levels and positivity for anti-TIF1 γ antibodies. Imaging revealed a solid-cystic pancreatic mass, which was histologically confirmed to be a solid pseudopapillary tumor. Following surgical resection, muscle enzyme levels normalized and cutaneous manifestations improved, although proximal quadriparesis persisted (Fig. 1). This case expands the spectrum of neoplasms associated with DM and highlights the relevance of atypical cutaneous manifestations and anti-TIF1 γ antibodies as markers warranting surveillance for occult malignancy. The clinical improvement following tumor resection further supports a paraneoplastic association.

Key Points

- Atypical cutaneous findings—such as pseudoangioedema, ovoid palatal patch, and generalized subcutaneous edema—may serve as clinical indicators of paraneoplastic dermatomyositis.
- The coexistence of dermatomyositis with a solid pseudopapillary pancreatic tumor represents an exceedingly rare association.
- This case study underscores the significance of incorporating rare pancreatic tumours in the list of malignancies for patients diagnosed with dermatomyositis and anti-TIF1 γ antibodies.
- Improvement of cutaneous lesions and normalization of muscle enzymes after tumor resection reinforce the causal link between the neoplasm and dermatomyositis.

Keywords Dermatomyositis · Generalized subcutaneous edema · Ovoid palatal patch · Pseudoangioedema · Solid pseudopapillary pancreatic tumor

✉ N. A. Uribe-Ruiz
nati4421@gmail.com

- ¹ Rheumatology Group, Department of Internal Medicine, Universidad de Antioquia, Calle 64 #51D - 154, Medellín, Colombia
- ² Hospital San Vicente Fundación, Medellín, Colombia
- ³ Neurology Resident, Universidad CES, Medellín, Colombia
- ⁴ Hospital Alma Máter de Antioquia, Universidad de Antioquia, Medellín, Colombia
- ⁵ Hospital San Juan de Dios de Yarumal, Antioquia, Colombia
- ⁶ Asociación Colombiana de Reumatología, Bogotá, Colombia

Introduction

Idiopathic inflammatory myopathies (IIM) are a heterogeneous group of diseases with variable clinical manifestations. With advances in tools for characterizing immunologic, genomic, and transcriptomic profiles, classification into distinct subtypes has become possible [1]. DM is one such subtype and may present as a primary disease or as a paraneoplastic manifestation. It may occur concurrently with cancer, precede its diagnosis, or even arise after malignancy is identified [2, 3].

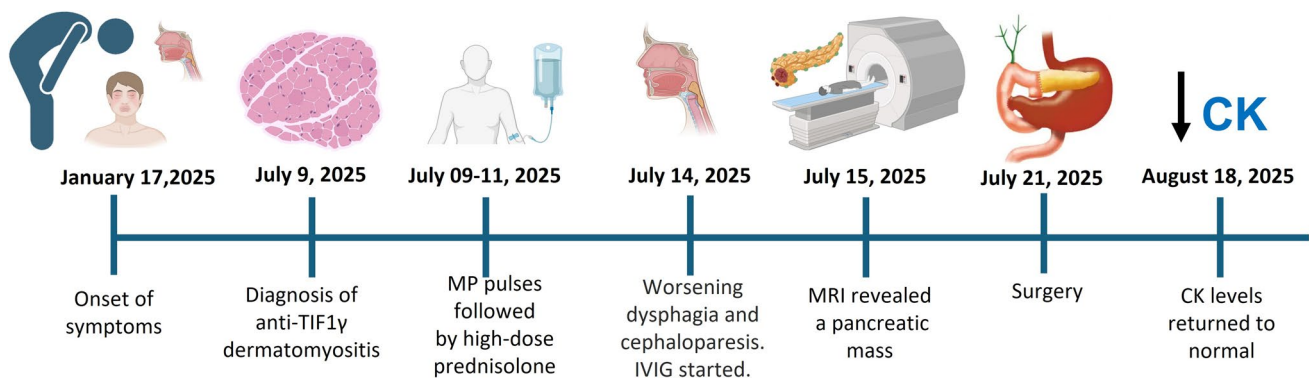


Fig. 1 Clinical chronology. MP: methylprednisolone, IVIG: intravenous immunoglobulin, MRI: magnetic resonance imaging, CK: creatine kinase. Created with Biorender.com

To determine malignancy risk in IIM, the International Myositis Assessment and Clinical Studies Group (IMACS) developed a consensus based on clinical characteristics and autoantibody profiles [2]. Although it guides risk-based screening strategies, it remains imperfect; even variables strongly associated with malignancy—such as anti-TIF1 γ antibodies—may have variable associations [3]. Similarly, atypical dermatologic findings—including the ovoid palatal patch, pseudoangioedema, and generalized subcutaneous edema—should prompt a thorough malignancy evaluation when present, although they are not exclusive to cancer-associated disease [4–7].

The types of cancer most commonly associated with DM and anti-TIF1 γ antibodies generally correspond to the most prevalent tumors according to age and sex [8], although they may also include exceptionally rare malignancies [9].

This case-based review highlights infrequent cutaneous manifestations in the context of DM with anti-TIF1 γ antibodies and their association with a very low-prevalence neoplasm Fig. 1.

Case report

A 21-year-old woman with no significant medical history presented with a six-month history of progressive proximal muscle weakness of 3/5 on Medical Research Council (MRC) scale, dysphagia, and cutaneous lesions consistent with DM, including a heliotrope rash, shawl sign, V-sign, poikiloderma, and holster sign, along with pseudoangioedema and an ovoid palatal patch (Fig. 2).

Initial laboratory assessment showed marked elevation of muscle enzymes, including creatine kinase (CK) at 1,267 U/L (reference range [RR]: 34–145 U/L), lactate dehydrogenase (LDH) at 1,044 U/L (RR: 120–246 U/L), and aspartate aminotransferase (AST) at 157 U/L (RR: 14–35 U/L). Immunological testing revealed a high-titer

antinuclear antibody (ANA) of 1:640 with a fine granular pattern (AC-4), while anti-dsDNA and extractable nuclear antigen (ENA) antibodies were negative. Complement levels remained within normal limits (C3: 106.8 mg/dL; C4: 18.6 mg/dL).

The extended myositis panel was strongly positive for anti-TIF1 γ antibodies. Non-contrast magnetic resonance imaging (MRI) of the thighs revealed diffuse, asymmetric muscle edema across the anterior, medial, and posterior compartments. These findings were accompanied by subfascial and perifascial fluid collections, along with significant subcutaneous tissue edema (Fig. 3A–C). Given the concordance between clinical manifestations, serological markers, and imaging findings, a diagnosis of dermatomyositis was established; consequently, further invasive procedures, such as electromyography or muscle biopsy, were deemed unnecessary.

She was initially treated with methylprednisolone pulses (500 mg every 24 h for three days), followed by high-dose prednisolone (60 mg every 24 h). Subsequently, she developed muscle strength worsening (MRC grade 2/5) with severe dysphagia and cephaloparesis, prompting administration of intravenous immunoglobulin (IVIG) 60 g per day for two days.

The patient was classified as high-risk for idiopathic inflammatory myopathy (IIM)-associated malignancy, consequently, a comprehensive screening including both basic and enhanced cancer panels was conducted. All investigations were unremarkable, with the exception of a contrast-enhanced abdominal CT, which revealed generalized subcutaneous edema and a 4.9 × 6.9 × 5.2 cm solid-cystic lesion in the pancreatic head and uncinate process (Fig. 3D–E), highly suggestive of a solid pseudopapillary neoplasm. The patient underwent a proximal pancreaticoduodenectomy with complete R0 resection (Fig. 4); histopathological analysis confirmed the diagnosis. Postoperatively, clinical follow-up showed rapid

Fig. 2 Dermatologic findings. **A.** Heliotrope rash and pseudoangioedema. **B.** Ovoid palatal patch and pseudoangioedema. **C.** Poikiloderma and V-sign. **D.** Poikiloderma and shawl sign. **E–F.** Bilateral holster sign



normalization of muscle enzymes (Fig. 5) and dermatological recovery. However, while motor strength partially improved (MRC grade 3/5), refractory dysphagia persisted, requiring gastrostomy for nutritional support.

Her hospitalization was further complicated by aspiration pneumonia and ventilatory failure due to *Mycobacterium tuberculosis* infection, confirmed on bronchoalveolar lavage. Glucocorticoids were tapered, antituberculous therapy was initiated, and additional IVIG doses were administered every three weeks. After a four-month hospitalization, she was discharged with a rehabilitation plan and a schedule monthly IVIG regimen, however, two months post-discharge, the patient was admitted to the local hospital with no signs of life (dead on arrival).

Discussion

DM is a heterogeneous disease with a wide spectrum of cutaneous manifestations, ranging from classic features—such as Gottron papules, heliotrope rash, and shawl/V-signs—to less common findings that may provide insights into phenotype and prognosis [6], including an ovoid palatal patch, pseudoangioedema, and generalized subcutaneous edema.

The ovoid palatal patch typically presents as a violaceous, symmetric, well-demarcated plaque crossing the midline of the hard palate; it is non-ulcerated and usually asymptomatic [10, 11]. In a cohort of 45 DM patients, Bernt et al. reported this finding in 40%, showing significant

associations with amyopathic DM, anti-TIF1 γ positivity, and increased malignancy risk, including more advanced-stage tumors and shorter intervals between DM onset and cancer diagnosis [4].

Pseudoangioedema is an uncommon but well-recognized manifestation of DM. It presents as non-allergic inflammatory edema that mimics true angioedema but without pruritus, urticaria, or airway involvement. It typically affects the face or periorbital region and may be accompanied by violaceous erythema or other classic DM lesions [5, 12]. The pathophysiology involves immune-mediated vasculopathy and increased capillary permeability due to endothelial injury and immune complex deposition [6]. Pseudoangioedema may appear at disease onset or during the course of DM and is sometimes associated with paraneoplastic forms linked to anti-TIF1 γ antibodies, as observed in this patient. It does not respond to antihistamines or epinephrine but improves with immunosuppressive therapy [12, 13].

Generalized subcutaneous edema is also rare. Proposed mechanisms include increased capillary permeability due to immune complex deposition, vascular injury, inflammation in adjacent muscle, vasculitis, or lymphatic obstruction [13]. Overexpression of vascular endothelial growth factor (VEGF) in DM muscle suggests that VEGF-induced vascular permeability contributes to this phenomenon, although serum VEGF levels are usually normal [14]. These cases typically present with severe, treatment-resistant disease, predominantly affecting the extremities [14, 15]. These findings should be considered red flags warranting exhaustive

Fig. 3 Non-contrast-enhanced MRI of the thighs. **A.** Coronal view. **B-C.** Axial view. Asymmetric and diffuse muscle edema involving the anterior, medial, and posterior compartments. Contrast-enhanced abdominal MRI. **D.** Axial view. **E.** Coronal view. Solid-cystic mass in the pancreatic head and uncinate process (white circles) and generalized subcutaneous edema (white arrows)

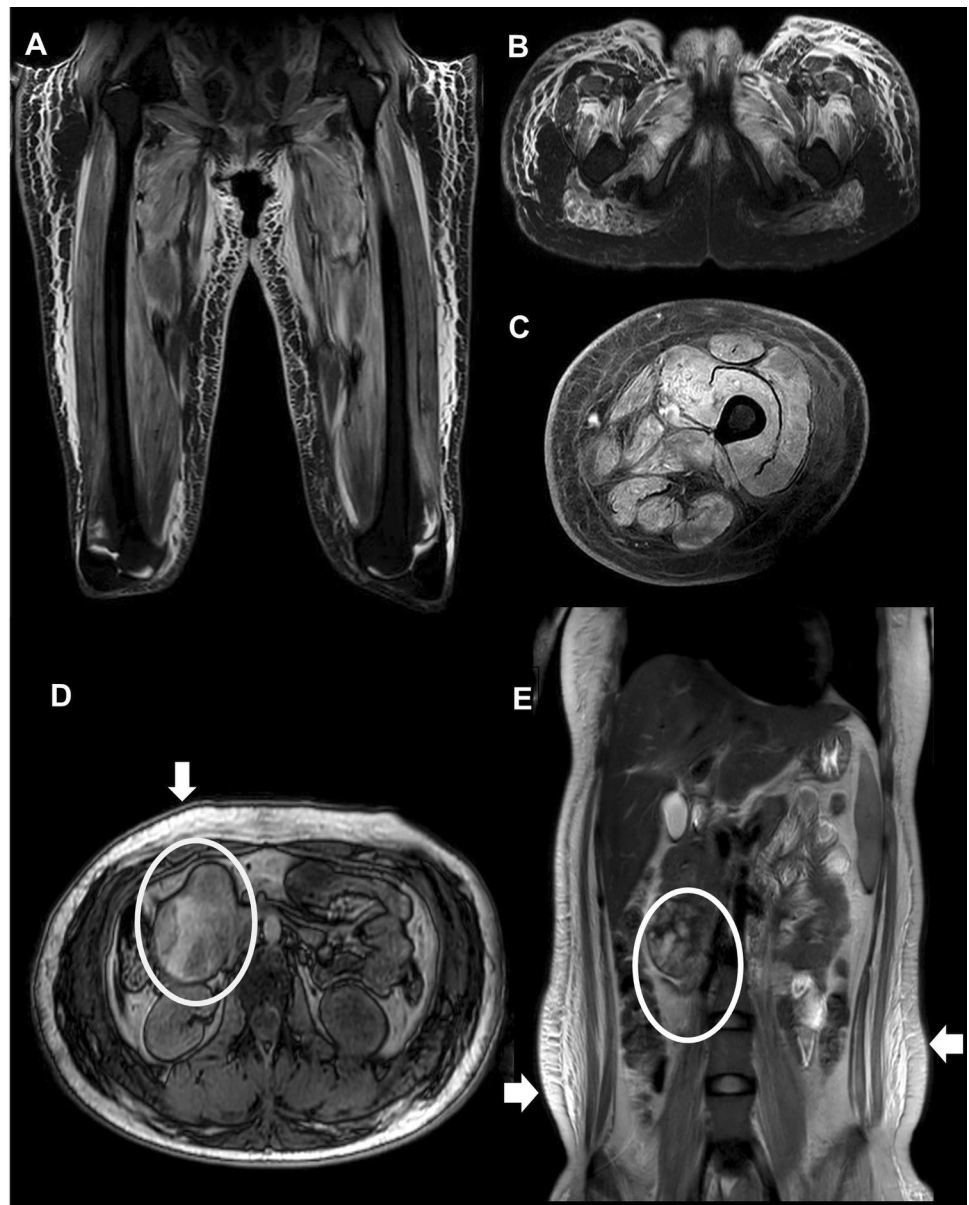


Fig. 4 Surgical specimen from proximal pancreaticoduodenectomy. A lobulated pancreatic mass is observed adhering to the wall of the duodenum

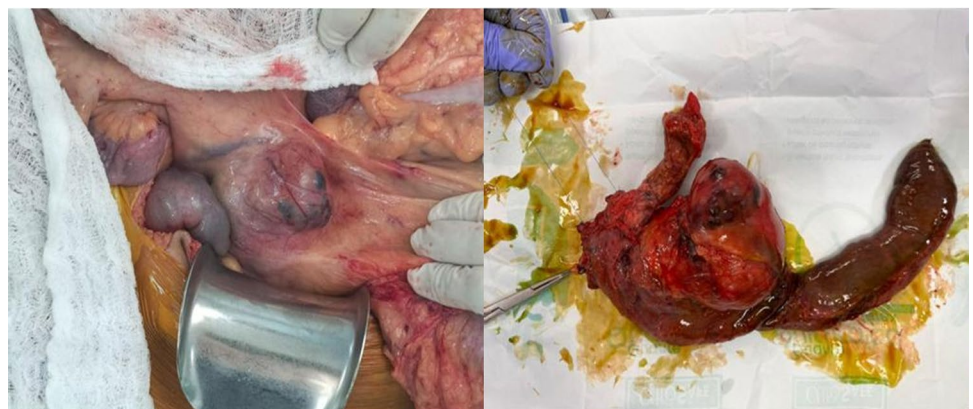
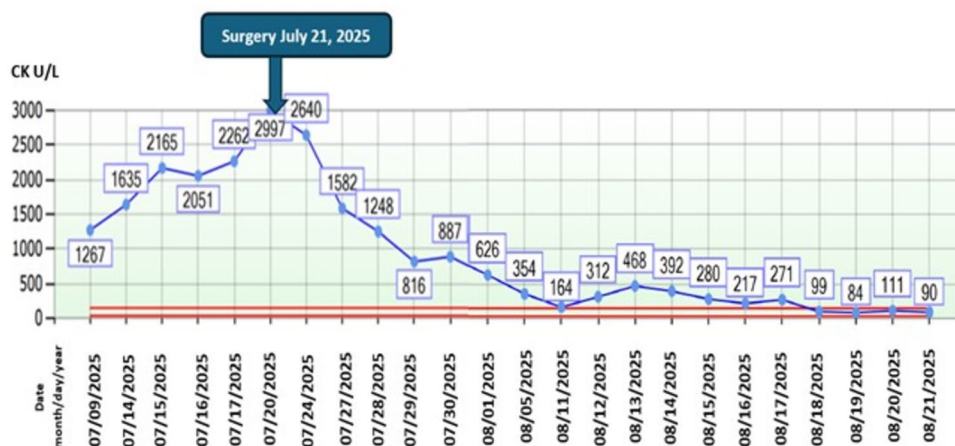


Fig. 5 Creatine kinase (CK) levels from admission to tumor resection on July 21, 2025



malignancy screening [10, 12, 14–16]. Larger cohorts are needed to confirm their specificity.

Pancreatic cancer accounts for ~1.54% of DM-associated malignancies [17–20], and among the few reports with histology, most cases are adenocarcinomas [18]. To our knowledge, this is the second published case of DM associated with a solid pseudopapillary pancreatic tumor and the first linked to anti-TIF1 γ positivity [9].

Solid pseudopapillary tumor represents <3% of exocrine pancreatic neoplasms and ~5% of pancreatic cystic tumors, predominantly affecting young women [21]. Classic MRI findings include the absence of septa, a predilection for the body or tail, and heterogeneous solid–cystic components, with the solid portion iso- or hypointense on T1-weighted images and mildly hyperintense on T2-weighted images [22]. In this case, the uncinate process location is rare (<1%) [21]. Prognosis is favorable, with 5-year survival ~97% and low recurrence after complete resection [23, 24].

Approximately 90% of these tumors harbor CTNNB1 exon three mutations that encode β -catenin [25]. Wnt/ β -catenin pathway dysregulation is a well-known oncogenic mechanism [26]. TIF1 γ regulates β -catenin ubiquitination with protein kinase C δ [27]. TIF1 γ can act as a tumor neoantigen; mutations occur in <1% of cancers and are associated with anti-TIF1 γ DM, although no direct oncogenic role of the autoantibody has been demonstrated [28]. This may partially explain tumor–autoantibody interactions in this patient.

In this case, the rapid normalization of muscle enzyme levels and the improvement of cutaneous lesions following tumor resection strongly support a paraneoplastic etiology. Regarding the persistence muscle weakness despite surgical intervention and immunomodulatory therapy, the concomitant infection with *Mycobacterium tuberculosis* served as a significant confounding factor. This infection, coupled with the sequelae of prolonged intensive care unit stay (ICU-acquired weakness) likely hindered the patient's clinical recovery and contributed to her deterioration. Furthermore,

published case reports of paraneoplastic dermatomyositis describe a heterogeneous clinical course following oncological treatment, with responses ranging from immediate post-operative remission to a partial, delayed, or even negligible improvement [29–33].

Teboul et al. analyzed a cohort of 73 patients with paraneoplastic dermatomyositis and found reported a median time to achieve complete clinical response (CRR) of 1.42 years (95% CI: 1.08–2.75) following tumor resection. Notably, only 49.3% of the patients achieved CRR during the follow-up period [34]. These findings support that the absence of immediate or early clinical improvement does not preclude a paraneoplastic etiology, especially in patients with complex intercurrent factors such as severe infections, chronic comorbidities, or prolonged stays in ICU.

Conclusions

DM associated with anti-TIF1 γ antibodies poses significant diagnostic and therapeutic challenges, particularly due to its strong association with occult malignancy. The identification of a solid pseudopapillary pancreatic tumor in a young woman with DM and anti-TIF1 γ positivity represents an exceedingly rare association that broadens the spectrum of malignancies linked to this disease.

Atypical cutaneous manifestations—pseudoangioedema, ovoid palatal patch, and generalized subcutaneous edema—serve as important clinical markers of paraneoplastic forms. Their presence should raise suspicion for an underlying neoplasm, especially when accompanied by high-risk antibodies such as anti-TIF1 γ . Although rare, these findings provide a valuable diagnostic window for earlier detection of malignancy-associated DM.

This case reinforces the importance of recognizing immunologic and dermatologic patterns characteristic of high-risk DM phenotypes and highlights the inclusion of solid

pseudopapillary pancreatic tumors among potential associated malignancies.

Funding Open Access funding provided by Colombia Consortium.

Data availability Data sharing is not applicable to this article as no datasets were generated or analyzed beyond those included in the manuscript.

Declarations

Ethical This case report is based on routine clinical care and does not constitute a clinical trial. Ethical approval was not required, as the information was collected and reported in accordance with standard clinical practice. Written informed consent was obtained from the patient for the anonymous use of her clinical information for academic and publication purposes.

Consent for publication The patient provided written informed consent for publication of this case report, including any attached images or clinical data, ensuring anonymity and confidentiality.

Conflicts of interest The authors declare no conflicts of interest.

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

References

- Connolly CM, Gupta L, Fujimoto M, Machado PM, Paik JJ (2024) Idiopathic inflammatory myopathies: current insights and future frontiers. *Lancet Rheumatol* 6(2):e115–e127. [https://doi.org/10.1016/S2665-9913\(23\)00322-3](https://doi.org/10.1016/S2665-9913(23)00322-3)
- Oldroyd AGS, Callen JP, Chinoy H, Chung L, Fiorentino D, Gordon P, Machado PM, McHugh N, Selva-O'Callaghan A, Schmidt J, Tansley SL, Vleugels RA, Werth VP, International Myositis Assessment and Clinical Studies Group Cancer Screening Expert Group, Aggarwal R (2023) International guideline for idiopathic inflammatory myopathy-associated cancer screening: an international myositis assessment and clinical studies group (IMACS) initiative. *Nat Rev Rheumatol* 19(12):805–817. <https://doi.org/10.1038/s41584-023-01045-w>
- Trallero-Araguás E, Rodrigo-Pendás JA, Selva-O'Callaghan A, Martínez-Gómez X, Bosch X, Labrador-Horrillo M, Grau-Junyent JM, Vilardell-Tarrés M (2012) Usefulness of anti-p155 autoantibody for diagnosing cancer-associated dermatomyositis: a systematic review and meta-analysis. *Arthritis Rheum* 64(2):523–532. <https://doi.org/10.1002/art.33379>
- Bernet LL, Lewis MA, Rieger KE, Casciola-Rosen L, Fiorentino DF (2016) Ovoid palatal patch in dermatomyositis: a novel finding associated with anti-TIF1 γ (p155) antibodies. *JAMA Dermatol* 152(9):1049–1051. <https://doi.org/10.1001/jamadermatol.2016.1429>
- Andersen MF, Longhurst HJ, Rasmussen ER, Bygum A (2016) How not to be misled by disorders mimicking angioedema: a review of pseudoangioedema. *Int Arch Allergy Immunol* 169(3):163–170. <https://doi.org/10.1159/000445835>
- Castillo RL, Femia AN (2021) Covert clues: the non-hallmark cutaneous manifestations of dermatomyositis. *Ann Transl Med* 9(5):436. <https://doi.org/10.21037/atm-20-5252>
- Lim D, Fiorentino D, Werth V (2023) Current concepts and advances in dermatomyositis: a dermatological perspective. *Clin Exp Rheumatol* 41(2):359–369. <https://doi.org/10.55563/clinexp Rheumatol/ue71ku>
- Kilinc OC, Ugurlu S (2023) Clinical features of dermatomyositis patients with anti-TIF1 antibodies: a case based comprehensive review. *Autoimmun Rev* 22(12):103464. <https://doi.org/10.1016/j.autrev.2023.103464>
- Al Harash A, Saeli S, Sandhu A, Dore A (2021) Pancreatic solid pseudopapillary neoplasm associated with dermatomyositis: a single case report. *J Clin Rheumatol* 27(8S):S705–S706. <https://doi.org/10.1097/RHU.0000000000001573>
- Liu HL, Chen YH (2023) Ovoid palatal patch: a portentous sign in dermatomyositis. *QJM* 116(5):377–378. <https://doi.org/10.1093/qjmed/hcac279>
- Franciosi E, Blankenship K, Houk L, Rashighi M (2020) Ovoid palatal patch: a clue to anti-TIF1 γ dermatomyositis. *BMJ Case Rep* 13(23):e234111. <https://doi.org/10.1136/bcr-2019-234111>
- Muro Y, Sugiura K, Akiyama M (2016) Cutaneous manifestations in dermatomyositis: key clinical and serological features—a comprehensive review. *Clin Rev Allergy Immunol* 51(3):293–302. <https://doi.org/10.1007/s12016-015-8496-5>
- Nishioka H, Shindo T, Shimizu H (2023) Dermatomyositis presenting with generalized subcutaneous edema. *Intern Med* 62(15):2273–2277. <https://doi.org/10.2169/internalmedicine.0687-22>
- Werner de Castro GR, Appenzeller S, Bértolo MB, Costallat LT (2006) Acute dermatomyositis with subcutaneous generalized edema. *Clin Rheumatol* 25(6):898–900. <https://doi.org/10.1007/s10067-005-0053-9>
- Yoshimi R, Nakajima H (2023) Subcutaneous edema in polymyositis and dermatomyositis. *Intern Med* 62(15):2161–2162. <https://doi.org/10.2169/internalmedicine.1199-22>
- Bhattacharjee R, Vinay K (2020) Ovoid palatal patch: an ominous sign in dermatomyositis. *J Clin Rheumatol* 26(4):e80. <https://doi.org/10.1097/RHU.0000000000000874>
- Bowerman K, Pearson DR, Okawa J, Werth VP (2020) Malignancy in dermatomyositis: a retrospective study of 201 patients seen at the University of Pennsylvania. *J Am Acad Dermatol* 83(1):117–122. <https://doi.org/10.1016/j.jaad.2020.02.061>
- Tripathi R, Fernandez AP (2021) Characteristics of hospitalized dermatomyositis patients with underlying malignancy: a nationally representative retrospective cohort study. *Arch Dermatol Res* 313(6):473–482. <https://doi.org/10.1007/s00403-020-02127-5>
- Hill CL, Zhang Y, Sigurgeirsson B, Pukkala E, Mellemkjaer L, Airio A, Evans SR, Felson DT (2001) Frequency of specific cancer types in dermatomyositis and polymyositis: a population-based study. *Lancet*. [https://doi.org/10.1016/S0140-6736\(00\)03540-6](https://doi.org/10.1016/S0140-6736(00)03540-6)
- Neri R, Barsotti S, Iacopetti V, Iacopetti G, Pepe P, d'Ascanio A, Tavoni AG, Mosca M, Bombardieri S (2014) Cancer-associated myositis: a 35-year retrospective study of a monocentric cohort. *Rheumatol Int* 34(4):565–569. <https://doi.org/10.1007/s00296-013-2910-1>
- Papavramidis T, Papavramidis S (2005) Solid pseudopapillary tumors of the pancreas: review of 718 patients reported in English

- literature. *J Am Coll Surg* 200(6):965–972. <https://doi.org/10.1016/j.jamcollsurg.2005.02.011>
22. Buetow PC, Buck JL, Pantongrag-Brown L, Beck KG, Ros PR, Adair CF (1996) Solid and papillary epithelial neoplasm of the pancreas: imaging-pathologic correlation on 56 cases. *Radiology* 199(3):707–711. <https://doi.org/10.1148/radiology.199.3.8637992>
 23. Tang LH, Aydin H, Brennan MF, Klimstra DS (2005) Clinically aggressive solid pseudopapillary tumors of the pancreas: a report of two cases with components of undifferentiated carcinoma and a comparative clinicopathologic analysis of 34 conventional cases. *Am J Surg Pathol* 29(4):512–519. <https://doi.org/10.1097/01.pas.0000155159.28530.88>
 24. Law JK, Ahmed A, Singh VK, Akshintala VS, Olson MT, Raman SP, Ali SZ, Fishman EK, Kamel I, Canto MI, Dal Molin M, Moran RA, Khashab MA, Ahuja N, Goggins M, Hruban RH, Wolfgang CL, Lennon AM (2014) A systematic review of solid-pseudopapillary neoplasms: are these rare lesions? *Pancreas* 43(3):331–337. <https://doi.org/10.1097/MPA.0000000000000061>
 25. Nagtegaal ID, Odze RD, Klimstra D, Paradis V, Rugge M, Schirmacher P, Washington KM, Carneiro F, Cree IA, WHO Classification of Tumours Editorial Board (2020) The 2019 WHO classification of tumours of the digestive system. *Histopathology* 76(2):182–188. <https://doi.org/10.1111/his.13975>
 26. Liu J, Xiao Q, Xiao J, Niu C, Li Y, Zhang X, Zhou Z, Shu G, Yin G (2022) Wnt/ β -catenin signalling: function, biological mechanisms, and therapeutic opportunities. *Signal Transduct Target Ther* 7(1):3. <https://doi.org/10.1038/s41392-021-00762-6>
 27. Yu C, Ding Z, Liang H, Zhang B, Chen X (2019) The roles of TIF1 γ in cancer. *Front Oncol* 9:979. <https://doi.org/10.3389/fonc.2019.00979>
 28. De Vooght J, Vulsteke JB, De Haes P, Bossuyt X, Lories R, De Langhe E (2020) Anti-TIF1- γ autoantibodies: warning lights of a tumour autoantigen. *Rheumatology (Oxford)* 59(3):469–477. <https://doi.org/10.1093/rheumatology/kez572>
 29. Primiano G, Plantone D, Sauchelli D, Cuccagna C, Renna R, Iorio R, Servidei S (2012) Resolution of muscle inflammation after tumor removal in a woman with paraneoplastic dermatomyositis. *J Rheumatol* 39(12):2359–2360. <https://doi.org/10.3899/jrheum.120806>
 30. Luu X, Leonard S, Joseph KA (2015) Dermatomyositis presenting as a paraneoplastic syndrome with resolution of symptoms following surgical management of underlying breast malignancy. *J Surg Case Rep* 2015(7):rjv075. <https://doi.org/10.1093/jscr/rjv075>
 31. Piras M, Panebianco M, Garibaldi M, Roberto M, Merlonghi G, Pellegrini P, Marchetti P (2021) A case of pathological complete response and resolution of dermatomyositis following neoadjuvant chemotherapy in HER2-positive early breast cancer. *Curr Oncol* 28(3):1957–1961. <https://doi.org/10.3390/curroncol28030182>
 32. Lin C, Ying Z, Sijing C (2019) Spontaneous resolution of dermatomyositis associated with fallopian-tube carcinoma following staging surgery: A case report. *Medicine (Baltimore)* 98(10):e14530. <https://doi.org/10.1097/MD.00000000000014530>
 33. Sabaté-Ortega J, Bujons-Buscarons E, Fina-Planas C, Vilanova-Anducas N, Vidal-Sarró N, Sala-González N (2023) Paraneoplastic dermatomyositis associated with urothelial cancer: report of a case and systematic review of the literature. *Front Oncol* 13:1223627. <https://doi.org/10.3389/fonc.2023.1223627>
 34. Teboul A, Allenbach Y, Tubach F, Belin L, Cassius C, Demortier J, Dossier A, Faucon C, Kasser C, Mekinian A, Monseau G, Fouchard M, Chambrelan E, Viguier M, Kluger N, Mahévas T, Bergeret B, Bachmeyer C, Lenormand C, Hotz C, Diaz E, Cordel N, Benveniste O, Bessis D, Bouaziz JD, Chasset F (2025) Prognostic factors for patients with cancer-associated dermatomyositis: a retrospective, multicentre cohort study of 73 patients. *Rheumatology (Oxford)* 64(5):2970–2978. <https://doi.org/10.1093/rheumatology/keae629>

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.